Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of Parts 73 and 74 of the	)	
Commission's Rules to Establish Rules for	)	MB Docket No. 03-185
Digital Low Power Television, Television	)	
Translator, and Television Booster Stations	)	
And to Amend the Rules for Digital Class A	)	
Television Stations	)	

To: The Commission

COMMENTS OF
THE NATIONAL TRANSLATOR ASSOCIATION

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SUMMARY

The National Translator Association ("NTA") has fully considered all of the points raised in the Notice of Proposed Rulemaking, and encourages the Commission to move quickly to adopt Rules, Regulations and policies which will enable the initiation of digital television translator service at the earliest possible time. Where NTA's Board of Directors was able to reach an agreement, comments are provided herein.

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COMMENTS

The National Translator Association ("NTA"), by its attorneys, hereby submits its comments in the Notice of Proposed Rulemaking ("NPRM") issued by the Federal Communications Commission ("FCC" or "Commission") in the above-referenced proceeding.

NTA is an organization of owners and operators of radio and television translator stations throughout the United States, both commercial and noncommercial, which provide high-quality over-the-air radio and television service to underserved areas. NTA, since its inception, has been concerned with the quality and the amount of radio and television programming that is available over the air to residents of underserved areas of America.

At a board meeting held in Denver, Colorado, on November 1, 2003, the full Board of Directors of the National Translator Association discussed the proposed rulemaking in detail. The members of the NTA Board of Directors cumulatively have hundreds of years of experience in operating analog translators, and the Board includes individuals who are participating in FCC-

authorized experimental programs in operating digital translators. In the few instances where there was no unanimity among the Board members on a particular issue raised in the NPRM, NTA takes no position on such items.

For ease of reference the numbered paragraphs in these comments correspond to the numbered paragraphs in the NPRM released August 29, 2003 (FCC 03-198), and published in the Federal Register on September 26, 2003.

The National Translator Association commends the Commission staff for its extremely thorough approach to the authorization of digital translators. The resulting Rules should be a comprehensive blueprint for the institution of a digital translator service. However, NTA remains concerned that by the time this proceeding is terminated, applications are filed for digital translators, processed, granted, and then built, a number of years will have gone by without any substantial improvement in the availability of local television stations to rural and underserved areas of the country.

The National Translator Association again urges the Commission to take prompt action on its pending petition to establish a Rural Translator Service. In that petition, the NTA has urged the Commission to adopt a different filing procedure for new translators that are designed to serve rural and underserved areas. The adoption of the Rural Translator Service and the expedited processing of the very simple applications that could be used offers the fastest and best method for bringing the full array of local television service to those areas. The Rural Translator Service, coupled with the digital translator Rules discussed in the instant proceeding, together constitute virtually the only way that rural America will be able to enjoy the full benefits of high definition television from broadcast stations.

PERMISSIBLE SERVICE

¶ 12. *Digital Translator Rebroadcasts*

NTA recommends expanding the Section 74.701(a) definition of a "Television Broadcast Translator Station" to include digital as well as analog translators. That provision should be supplemented as follows to reflect the basis of the distinction between them:

> "Translators are designated as analog or digital consistent with the format of the output signal"

¶ 13 *Continuation of Analog Translators After the Transition to Digital Is Complete in an Area (Analog Full Service Stations No Longer Operating)*

NTA has identified several issues which need to be taken into account:

1) An analog translator should be able to continue to operate in the analog format as long as the primary station is transmitting an analog signal.
2) If a companion digital primary station includes a digitally encoded replica of the program of the primary analog station, the digitally encoded source is thought to be already allowed as the input to the analog translator which is authorized to retransmit the programs of the analog station.[1] However, specific language to this effect should be added:

> "If the programs of the analog station are continuously included in the signal of the companion digital primary station, then the input for the analog translator may be derived from this source."

[1] *See* §74.731(b): "[A] television broadcast translator station or television booster station may be used only to receive the signals of a television broadcast station… *or other suitable source* (emphasis added)… for the simultaneous retransmission of the programs and signals of a television broadcast station." The digitally encoded replica of the analog station's programs is clearly a "suitable source."

NTA recommends that a digital translator be permitted to carry the programs from multiple primary stations encoded with no less than a standard definition format for each. The sources may be from any mixture of analog and digital primary stations. Permission from each primary station would, of course, be required. This arrangement would allow flexibility in situations where only a few channels are, or maybe only one channel is, available for a digital translator. It may ultimately also be useful for translators that serve and are supported by only a small population (provided the hardware to accomplish the digitizing and combining of the sources becomes affordable). A multi-source translator such as described here would usefully be included within the definition of a digital translator.

¶ 14 *Heterodyne Frequency Conversion, Regenerative and Demodulate-remodulate Translators*

Analog translators, for the most part, are pass-through devices with usually two internal frequency conversions – first to the IF frequency and then to the final frequency.[2] Alternatively, some use a modulator and start with a video and audio signal from a receiver or a microwave link. However, no signal processing is incorporated in either type.

With the advent of digital encoding and the error correction features incorporated in the digital transmission format, it becomes feasible to regenerate the signal and remove any errors that are present at the translator input. Because the coverage of a digital translator is dependent

[2]Some older translators use a single conversion from the input to the output frequency.

in part on the quality of the transmitted signal, the ability to eliminate errors is an important improvement over analog translators.

As is discussed more fully in a later section on emission masks, it is important to have the least possible unwanted signal transmitted in the adjacent channels. A heterodyne translator depends on one or more band pass filters to reject any signals or noise in the channels adjacent to the input. There is, however, a practical limit to how sharp the filtering can be in practice, and noise and/or discrete signals adjacent to the input channel inevitably contribute to the out-of-band spurious products in the output. A translator which regenerates the bit stream, by contrast, must demodulate the incoming signal and remodulate it after the error correction process. The remodulation process provides a clean starting signal for the output section of the translator as a by-product of the correction action. In a regenerative translator, the out-of-band spurious products are entirely controlled by the circuits of the translator. Out-of-band signals or noise at the input are rejected and not passed through to the output.[3]

Because a **new** regenerative translator is expected to cost about $1500 more than a heterodyne type of comparable power, NTA recommends that the use of regenerative mode

[3]This discussion is only valid if the out-of-band extraneous signals and/or noise at the translator input are not of a level that blocks the error correction process. However, a regenerative translator should be designed to shut down if the error correction process cannot function.

translators be normal practice and required for all translators of more than 30 watts of average digital power. A waiver of this requirement should be allowed

a) for installation in small isolated communities where adjacent channels are not used, and

b) in the event some presently unknown technical problem arises with the use of regenerative translators.

A third configuration will also be required to properly account for the translator that starts with a modulator, as would be used if the incoming signal is delivered by microwave or if any local insertions are contemplated. This configuration should also be explicitly recognized for digital translators as it is for analog translators.

As it is uncertain how the process of bringing digital television to rural areas will unfold, it is important for the Rules to allow maximum flexibility. **Analog input to digital output translators** should therefore expressly be allowed and included in the definition of a television broadcast translator station.

¶ 15 *Local Signal Insertions*

NTA recommends that local originations be limited to the types of messages currently allowed for analog translators, i.e., acknowledgments of support and emergency messages. Emergency messages should be permitted in a manner that will be seen or heard by the public or in coded form to activate emergency-related equipment.

A licensee desiring to make more extensive use of local origination should license the station as a "Digital LPTV station." This would not prevent the station from rebroadcasting one

or more primary station(s) on whatever time schedule is desired, but with the LPTV designation there would be no limit on the time devoted to local origination.

¶ 16 *DTV Broadcast Signal Alterations*

NTA has outlined its suggestions regarding limiting modification of the primary signal by a digital translator in the answers to previous questions. However, this paragraph raises the further question of the necessity of a translator's carrying the ancillary signals of its primary station should it be necessary to multiplex limited definition versions of the programs of several primary digital stations on one translator. The ancillary and supplemental services not related to the program(s) may or may not be relevant to viewers in the translator-served areas. It is recommended that, subject to the agreement of the affected primary station, a translator which needs to conserve spectrum in order to multiplex multiple programs as outlined above not be required to carry ancillary and supplemental services.

If a translator is presented with an opportunity to **originate** ancillary and supplemental services on a subscription basis, it is recommended that the station convert to LPTV status.

¶ 17 *Digital Translator Signal Sources*

Signal sources in this context refers to the incoming delivery method. There seems no reason to treat digital translators any differently than analog translators, with a single exception: truly rural translators should be granted special filing arrangements and/or expedited processing, as proposed in NTA's petition for the establishment of a "Rural Translator Service"; the input signal should be limited to terrestrial sources, as proposed in the Petition.

Relays in the Broadcast Auxiliary Band should be available to digital translators on the same basis as for analog translators.

¶ 20 *Distinctions between Low Power Television and Television Translator Stations*

The principle that a translator should be confined to transmitting its associated primary station has been extensively discussed above, along with comments on appropriate exceptions that do not adversely affect the basic concept. NTA agrees that translators and LPTV stations serve different purposes. There does not seem to have been any difficulty with the present arrangement whereby analog translators can convert to LPTV status or vice versa, and it is recommended that this scheme be extended to their digital equivalents.

¶ 23 *Should digital LPTV stations be required to use some of their channel capacity to provide a free video programming service to the public?*

NTA supports the concept that a video program service designed to be received by the public should be offered by digital LPTV stations, but such stations should be allowed to offer either free or subscription services to the same extent that Part 73 stations can.

¶ 24 *Should digital LPTV stations be allowed to offer ancillary and supplemental services, including subscription services as allowed for DTV and digital Class A stations?*

Digital LPTV stations should have the same rights as full-service DTV and digital Class A stations with the same restrictions as appropriate.

¶ 25 *Should digital LPTV stations be allowed to transmit only ancillary and supplemental services without any free public program during a time period such as 12:00AM to 6:00 AM?*

The NTA recommends that there be a minimum of one standard definition program at all times when a digital LPTV station is operating, in recognition of the fact that TV channels occupy spectrum that is specifically designated for broadcasting to the public. Such a requirement will minimize the interest of spectrum speculators in obtaining digital LPTV stations for data transmission purposes, restricting their availability for serving the public. However, the NTA would not be opposed to the limited use of a digital LPTV station solely for transmitting only ancillary and supplemental service in the off- hours.

CHANNEL ASSIGNMENTS

¶ 29 *&* 30 *Use of Channels 52 to 59 and 60 to 69 for New Translators*

It is necessary to find spectrum for more analog translators in addition to the vast requirement for spectrum for the digital companion translators. There is a legal requirement for all TV stations, including secondary stations, to vacate Channels 60 to 69 when the transition is over (when full service analog stations shut down). Subject to this limitation, and recognizing the secondary status of translators, it is essential to preserve, for the maximum time possible, the valuable television program services currently provided by translators operating on Channels 52 to 69. There should be no mandated expiration time for the use by translators of Channels 52 to 59, and no set limit for the use by translators of Channels 60 to 69. The mandatory sunset on Channels 60 to 69 need not and should not be applied to translators.

A prospective translator licensee would not choose an out-of-core channel without good reason. Accordingly, there should be no requirement to demonstrate necessity in connection with an application to use an out-of-core channel.

Channels 52 to 69 must be available for digital translators and continue to be available for analog translators, as they are at present!

INTERFERENCE PROTECTION

¶¶31 to 33 *Definition of "Protected Contour Values" for Digital LPTV and Translator Stations:*

The proposed values of the protected contours result in contours that are farther out and encompass more area than the analog protected contours. It is likely that digital translators will serve greater areas than analog translators of comparable size[4]. Accordingly, the more extensive protected contours for each frequency band as defined in the NPRM are appropriate[5].

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[4]Most homes served by rural translators routinely use outside antennas. Such homes will make the best possible use of digital signals in their area.

[5] *I.e.,* 43 dBu for Channels 2 to 6, 48 dBu for Channels 7 to 13, 51 dBu for Channels 14 to 51 and extended to Channels 52 to 69.

¶ 41 *Interference Protection Methodology*

The selection of the channel for a new translator, whether analog or digital, requires a determination of non-interference from the new application to stations, CP's, and prior-filed pending applications. The traditional way of determining interference involves the calculation of protected contours with the F50/50 curve, interference contours with the F50/10 contours for co-channel interference, and F50/50 curves for adjacent channel and other interference. This method for the most part does not take into account terrain shielding. The FCC's OET Bul. 69 and a related computer program (Longley-Rice Terrain Dependent Signal Strength Calculations) are used to predict interference based on the entire terrain path from the translator to areas within the protected contour of another station. Theoretically, to take advantage of this more sophisticated calculation, it is necessary to ask for a terrain shielding waiver and cite OET Bul. 69 as the means used to prove the terrain shielding. The OET Bul. 69 program is proving to be very useful although somewhat complicated to use in practice. It is necessary to have the computer program available.

It is recommended that the primary method of analysis continue to be the simpler contour overlap procedure, including retaining the F50/50 curves for non-co-channel interference. However, the OET Bul. 69 procedure should be routinely available as an alternative calculation method if the simple contour overlap analysis is not sufficient. That is, it should be in place as a second step, if needed, rather than being brought into play on a waiver basis.

The OET Bul. 69 procedure determines interference by determining the population loss which a protected station will suffer from the interference which would come from the operation

of a proposed station. Zero population loss is allowed, but the actual calculated loss is rounded off to the nearest whole per cent. Thus, a calculated population loss of 0.499% or less rounds to zero and 0.5% population loss effectively becomes the break point.

Full service digital TV stations when making changes are allowed to cause 2% loss to another station, but not to bring the total loss of any one target station above 10%. In order to effect a reasonable compromise between protecting the service area of a translator or LPTV station but keeping the maximum practical leeway in finding the many new channels which will be needed for new translators, NTA recommends that the same 2% - 10% rule be adopted for incoming interference to both analog and digital LPTV and translator stations. That is, a proposed station could not cause predicted interference to another LPTV or translator station in excess of 2% and could not bring the total interference to such a protected station above 10%. Applications for Class A, LPTV and TV translator stations are granted without regard to incoming interference. Thus some such stations may already show 10% or more interference before the new application is considered. In this case, the decision should be made on the basis of the population loss rounded to the nearest whole percent, which, if less than 0.5%, is none. NTA further proposes that the policy of rounding the per cent lost population to the nearest whole per cent be made a part of the Rule.

¶ 48 *Vertical Patterns of Transmitting Antennas and Downtilt:*

The signal strength calculation methodology in OET Bul. 69 determines the vertical angle from the transmitting antenna to the location being analyzed and determines the ERP towards this location using both the vertical and horizontal patterns of the transmitting antenna.

The use of horizontal patterns is firmly established and working well. No change is needed with respect to this pattern. However, the FCC's implementation of the OET Bul. 69 procedures allows for only one vertical pattern for each frequency band and type of transmission. That is, there is one pattern each for analog low band VHF, digital low band VHF, analog high band VHF, digital high band VHF, etc., for a total of six patterns. These patterns were chosen to be representative of the vertical patterns of the antennas used by full service stations. Further, it is not possible to specify the actual downtilt of either a proposed or target station.

These patterns do not correspond well to the patterns commonly used in translator installations. They are based on higher gain antennas (with correspondingly narrower vertical patterns) than the antennas commonly used by translators.

If, and only if, the Commission feels it cannot accommodate actual vertical patterns as part of the application process, three vertical patterns should be established for each band – broad, medium, and narrow. LPTV and translator applicants should be required to specify which vertical pattern is closest to the antenna they will use. In addition, the electrical and mechanical downtilts, if any, should be specified in the application and utilized in the analysis. Alternatively, it is suggested that the several vertical patterns be developed by industry consensus outside the rulemaking and incorporated into OET Bul. 69 if actual patterns for each application cannot be accommodated.

¶ 57 *Mandatory Offset for Analog Low Power TV and Translator Stations*

The National Translator Association does not take a position on this question.

OTHER TECHNICAL ISSUES

¶ 61 *Power Limits*

Analog power calculations are based on the power during the interval when a sync pulse is being transmitted. Digital power ratings are based on the long term average of the digital power. Thus, comparisons of analog and digital power are comparisons of numbers rather than real power. The laboratory tests leading to the adoption of the 8VSB digital transmission system concluded that the digital signal value could be about 12.5 dB below the analog signal value for comparable reception. The Commission's proposal is to set the maximum allowed digital ERP at 1/10th of the analog value (-10 dB) which with the 12.5 dB equates to a 2.5 dB increase. A noisy analog signal will make a picture which is still watchable, even if not of desired quality, but the digital signal will not make a picture at all if the noise is excessive. The 2.5 dB provides relief from the "cliff effect" and the two signal values appear close to being equally effective.

Presumably a large number of companion digital LPTV and TV translator stations will be looking for interference free spectrum. Accordingly, it is prudent to stay with what seem to be closely equivalent power limits. After the need for companion digital stations is satisfied and experience is gained with the maximum digital power limits at one tenth the analog value it will be time to consider higher limits.

¶ 62 *Out-of-Channel Emission Limits*

It is apparent that the full measure of companion digital LPTV and TV translator stations can only be achieved by making extensive use of stations on adjacent channels. Thus, the level

of spurious emissions from a digital transmitter in the adjacent channels is a matter of utmost importance. Establishing the out-of-channel emission limits is a balancing act. The tighter the limits the more costly the equipment becomes and, after a certain point, the more critical its adjustment and maintenance become.

It is also likely that a significant number of locally owned translators will not construct companion digital stations, but rather because of budget constraints will convert their analog equipment to digital operation at the appropriate time. The mask which can be achieved by such converted equipment must be deemed acceptable in the absence of an actual interference problem. Specific suggestions follow for very small, small, and large transmitters. Interference is caused by the absolute level of the interfering signal, but complying with different emission masks on the basis of ERP is unwieldy at best. It is proposed, therefore, that the requirement be based on transmitter size (average digital power) with large, small, and very small categories. The masks are as defined by Gary Sgrignoli[6]:

Stringent	A(dB) = 47 dB from band edge to delta f = 0.5 MHz
	A(dB) = 11.5*(delta f + 3.6) for delta f = 0.5 to 6.0 MHz
	A(dB) = 76 dB beyond delta F = 6.0 MHz
Simple	A(dB) = 46 + (delta f2/1.44) from band edge to delta f = 6.0 MHz
	A(dB) = 71 dB beyond delta F = 6.0 MHz

A(dB) = attenuation in dB below the average in-band (6.0 MHz) digital power

[6] Sgrignoli, Gary, DTV Repeater Emission Mask Analysis, *IEEE Transactions on Broadcasting,* March 2003, Vol. 49, No.1 at pp.48 &49. Also available at the following URL: WWW.Zenith.com/digitalbroadcast/downloadsDTV Emission Mask Analysis.pdf, page 14,

Proposed Power Categories

	VHF	UHF
Very small	up to 1 watt	up to 6 watts
Small	1.1 to 10 watts	6.1 to 30 watts
Large	above 10 watts	above 30 watts

1) New "FCC Certified" Equipment: It is recommended that the requirement be:

a) Large: "Stringent Mask"

b) Small: "Simple Mask"

c) Very small: Spurious in any 500 kHz bandwidth be at or below 28 dB

2) Analog Equipment Modified to a New Certified Model by Addition of Manufacturer Supplied Kit:

Same as new FCC certified equipment

3) Analog Equipment Modified on a Custom Basis for Digital Operation:

Same as new FCC certified equipment.

As an exception an existing Class A, LPTV or TV translator transmitter of not more than 100 watts analog power should be allowed to be converted to digital operation with an emission

equations 4-3a to 4-3d and 4-4a to 4-4b

mask of:

A(dB) = 40.6 + (delta f x 3.33) for delta f = 0 to 6.0 Mhz

A(dB) = 60.6 + ((delta f -6) x 6.37) for delta f = 6.0 to 7.5 Mhz

A(dB) = 70 dB beyond delta f = 7.5 Mhz

It is a virtual certainty that digital translators will be fitted into the adjacent channels between existing analog translators, e.g., analog 42, 44, 46 with digital 43 and 45 added. The present estimates are that the same size transmitter will produce about 25 to 30% average digital power.

Gary Sgrignoli[7] has estimated that if a simple mask is used the planning factors for avoiding interference from the new digital station to the analog stations are:

new DTV upper adjacent to existing analog ratio of 10.2 dB (DTV lower power)

new DTV lower adjacent to existing analog ratio of 11.4 dB (DTV lower power)

100 watt UHF translators are a very common size. It is likely that the same size transmitter would be used with the average digital power at 25% or 6 dB lower than the analog, and that the simple emission mask would be the desired one. However, interference would exceed this planning factor by 4.2 to 5.4 dB, and this calculation would seem to indicate that the new digital transmitters would need a better emission mask.

Practical experience may well demonstrate that better filtering than the simple mask will be required. However, this combination is a coordinated system and, if the simple mask is not satisfactory, higher performance mask filters would have to be installed. Sgrignoli also describes

[7] Sgrignoli, *Ibid*., Table 4-2

a “compromise” emission mask, with performance between simple and stringent, which would be a logical upgrade if experience dictates it is needed.

Aside from the cost of the better filter required to meet the stringent mask standard, the sharper slope of the bandpass introduces group delay of sufficient magnitude to require pre-correction. This is a compelling reason not to require the stringent mask when it is not absolutely needed, particularly in smaller transmitters where the extra cost would loom large.

It is recommended, as stated above, that only the simple mask be mandated at this power level. If it is insufficient and the interference is within a coordinated system, then it is to be expected that the problem will be solved internally. If different parties are involved, then custom would dictate that the owner of the new transmitter would have the responsibility for and cover the cost of the better filter.

¶¶ 72 - 73 *Equipment Standards Related to Signal Reception and Technical Quality:*

Unlike analog television , the quality of the video, audio, and ancillary outputs of the digital receiver will not depend upon the quality of the transmitted signal. Rather, the extent of the useable coverage will be reduced if the transmitted quality is poor. NTA endorses the statement in ¶73: *“We do not propose signal quality related standards for digital translators and LPTV transmitting equipment.”*

¶ 81 *Equipment Approval Process and Requirements*

1) New Equipment: §74.750(a) of the current Rules provides:

> A low power TV, TV translator, or TV booster station shall operate with a transmitter that is either certificated for licensing under the provisions of this subpart or type notified under Part 73 of this chapter.

The type certification (and its predecessor, type acceptance) process has worked well over the whole history of LPTV and TV and FM translator stations. It is recommended that type certification be continued as a requirement for digital LPTV transmitters and TV translators.

The approval of equipment "type notified under Part 73" is a much looser process. This is not a problem for Part 73 operations because transmitters initiating service under this part of the Rules are subject to a proof of performance at the time of installation. However, many LPTV transmitters and translators are installed by persons who do not have the skills and/or the test equipment to do a proof of performance at installation. Further, the digital signal is more complex and, at least initially, proper installation procedures are less well known. For these reasons it is recommended that only type certified equipment be authorized and the reference to "notified under Part 73" be eliminated, except that existing certified analog equipment be "grandfathered" for digital use as described below.

2) Analog equipment modified for digital use:

a) Manufacturer supplied modification kits: Occasionally manufacturers have supplied upgrading modification kits for certified or type accepted translators. For example, kits have been offered with solid state modules to replace tube modules. With the installation of the new modules, the transmitter becomes a new model which has been type certified by the manufacturer, and the kit includes a new model identification label which is affixed to the transmitter as part of the modification. The manufacturer determines what

testing is necessary and includes appropriate instructions with the kit. NTA recommends that the forthcoming Report and Order recognize that a transmitter modified for digital operation as described here meets the certification requirement.

b) Modification without manufacturer supplied kit: It is likely there will be instances where a user converts an analog translator or transmitter to digital by the addition of module(s) or other modification. Two examples are modification of the power metering to respond to the average digital power level and the addition of a mask filter. It is recommended that such modifications be allowed, i.e., the use of the transmitter should be authorized for digital as it was before for analog. The user should make appropriate measurements, particularly calibration of the power meter and of the out of band spurious emissions(emission mask). These measurements should be recorded in accordance with good engineering practice and retained as part of the station's permanent record.

STATION OPERATION

¶ 85 *Station Identification*

The identification requirement has long been a point of contention with translator users. The Morse Code identification mandated by Section74.783 is not a practical means of identifying and locating a translator. A special receiver that would tune in the relevant TV band and be equipped with a beat frequency oscillator would be required to convert the frequency shift keying to an audible and readable signal. The practical way to locate a translator is by triangulation using a directional receiving antenna. NTA urges the Commission to accept the

premise that the identification of the primary station which is carried on through the translator is also the identification of the translator and satisfies the requirements of Article 19 of the ITU Radio Regulations. This is the practice in other countries which do not require separate and unique identification of translators.

NTA is opposed to the unique identification requirement, but if the Commission is determined to kept a unique identification requirement, the provisions of §74.783 should be retained with the added provision:

> Any digital translator which is so constructed that information can be added to the incoming bit stream may satisfy the identification requirement by embedding the station's call sign in vacant space in the bit stream or in the PSIP.

The 0.001kW limitation in Section 74.783 should be augmented to read:

> "…operating over 0.001 kW peak sync analog power or <u>average digital power</u>…"

AUTHORIZATION OF DIGITAL LPTV AND TV TRANSLATOR STATIONS

¶ 91 *Digital LPTV and TV Translator Station Authorization*

The National Translator Association concurs in the tentative conclusion that, except as specifically modified, the Rules, policies and procedures applicable to analog stations in the LPTV service are applied to digital LPTV and TV translator stations. The National Translator Association is and has been concerned that frequency speculation, which has accompanied the previous window filings, not be encouraged or condoned by simplified procedures.

¶ 92 *Digital Conversion on Channels Authorized for Analog Service*

The Commission proposed to authorize the digital conversion of a licensed analog LPTV or TV translator station, or a station holding a construction permit for such a facility, as a minor change, with certain restrictions. The NTA believes that the regulatory process for converting an existing analog LPTV or TV translator station should be simple. As shown in the following table, if an analog station is converted to digital at 25% average digital power (- 6 dB), there is no increase in predicted interference to any other station. That is, if all other stations are protected by the analog operation, they will continue to be protected. The protection actually increases except for the one case of co-channel with offset where it remains the same.

The ratios are the threshold interference ratios in OET Bul. 69. This corresponds to a practical scenario where an analog translator converts to digital with the equipment unchanged except for the addition of a mask filter.

RELATIVE INTERFERENCE WITH DIGITAL POWER

6 dB BELOW ANALOG POWER

	Analog to Analog	Digital to Analog	Power Change	Change in Interference
Co Channel With offset	**+28dB**	**+3.4dB**	**-6dB**	**none**
Co Channel without offset	**+45dB**	**+34dB**	**-6dB**	**-17dB**
Adjacent Channels Protected Station Upper	**-3dB**	**-17dB**	**-6dB**	**-20dB**
Adjacent Channels Protected Station Lower	**-13dB**	**-12dB**	**-6dB**	**-5dB**
Translator 15 Channels Above Protected Station	**-9dB**	**-31dB**	**-6dB**	**-28dB**

Notes: 1. Ratios in columns 2 & 3 are the amount by which the interfering signal must be below the

desired signal. Minus indicates interfering signal stronger than desired.
2. Change in Interference: minus indicates less interference.

Accordingly, NTA proposes that an analog LPTV or TV translator station be permitted to convert to digital operation at 25% power with all other parameters remaining the same by notifying the Commission of the change by letter rather than going through an application process.

If an existing LPTV or TV translator licensee chooses to use a power in excess of these limits, then the applicant should file a minor change application consistent with the Commission's current Rules and regulations. Power in excess of 25% may also not cause interference, but under those circumstances non-interference should be demonstrated to the Commission through the application process.

¶ 93 *Authorization of New Digital Stations*

As analyzed by the Commission, there are two circumstances under which new digital LPTV and TV translator stations might be authorized. First would be companion digital stations to existing analog low power television and TV translator stations, and the second would be as new digital stations unassociated with any existing analog operation.

NTA would support a procedure that would authorize a companion digital station for an existing analog LPTV or TV translator station provided, however, that any new digital station obtained under that procedure would be subject to the same policies and Rules as their full-service counterparts under Part 73. That is, upon the completion of the conversion from analog to digital broadcasting in the United States, the LPTV or TV translator licensee would have the

option of retaining either the analog channel, or the digital channel, and surrendering the channel not selected to the Commission.

In other words, the Commission would be creating a temporary companion service, as it did with the Part 73 stations. NTA believes that this is a necessary step so that rural and underserved areas of the United States can have the same benefits of digital and high definition television as enjoyed by urban residents. Since the Commission is interested in fostering the growth of digital television, by providing a companion station to existing licensees, digital service can truly be nationwide.

The Commission has expressed concerns over the fairness and legality of assigning a companion digital channel. NTA believes that one element of fairness is that the opportunity to obtain a companion digital station should be no more than an opportunity to replicate the analog coverage with the digital signal. Another aspect of fairness is that every analog LPTV and TV translator station be able to find a channel for a companion digital assignment, which objective is fostered by restricting the reach of each companion digital station. If the requested companion digital station will have the same engineering parameters as the analog parent the ERP should be no higher than 10 dB below the analog ERP. A change in the antenna center of radiation above ground of no more than 50 feet to allow separation of the two antennas should not be considered a change. If the companion digital station is requested at a different location, as may sometimes be necessary, a practical means of achieving parity but still allowing some flexibility would be to require that the protected contour of the companion digital station not extend outside the analog contour corresponding to a field strength 10 dB below the analog protected contour value, i.e. for UHF not outside the 74 - 10 = 64 dBu analog contour. The assignment of full service digital

companion channels with ERP's designed to approximate the coverage of the analog parents provides ample precedent for loaning channels to Class A, LPTV or TV translator stations with similar restrictions.

As the Commission considers how it is going to authorize new digital non-companion low power television and TV translator stations, the Commission should keep in mind that the potential exists that it could be years before these digital stations are up and operating. As the Commission noted in footnote 175, the National Translator Association has pending a petition for rulemaking to establish a Rural Translator Service to meet today's needs of rural and underserved America for over-the-air television service from local stations. The Commission should demonstrate its commitment to rural America by moving ahead, separately and independently from this proceeding, with the establishment of a Rural Translator Service. The National Translator Association pointed out that, because of the Rules and policies of the Commission over the last few decades, there are large unmet over-the-air television needs in rural America, and the National Translator Association fashioned a proposal that would provide for the expeditious meeting of those needs without adversely affecting the ability of low power television stations and television translator stations in more populous areas also to grow. In that petition, the National Translator Association proposed one-day rolling windows, but only for those applications that met the strict criteria set forth in the petition, in order to avoid frequency speculation and mass filings that, intended or not, effectively slowed down the authorization process for many years. As an example, in a little over a month it will be 2004, yet the Commission is still struggling to process thousands of applications from the year 2000 window. Although NTA proposed the one-day rolling window, it did so in the belief that anyone applying

or a facility who met the strict and limited requirements of the Rural Translator Service would do so with a sincere desire to provide service, not as a frequency speculator.

The Commission is also considering a one-day rolling window for applications for new digital LPTV and TV translator stations. The NTA is in favor of this procedure. Only applications filed on the same day would be mutually exclusive. These should be resolved by engineering solutions or agreements whenever possible. If not possible, a lottery should be used to resolve the conflict. However, it is essential that there be a limit on the number of applications that one applicant can file in a given period to prevent mass speculative filings. It is suggested that the limit be set at no more than five applications in any thirty-day period from the same applicant or legally connected parties as customarily defined. The start of the one-day rolling window procedure should be delayed thirty to sixty days after the conflict list of mutually exclusive applications from the "companion digital station filing window" is published, so that this information is available to be used in the channel selection process.

DIGITAL BOOSTER STATIONS

¶118 *Digital On-channel Boosters:*

It is quite generally agreed that digital on-channel boosters will be more practical to implement than their analog counterparts and also that there will be more need for them. NTA recommends that on-channel boosters be recognized as a distinct category in this proceeding, that they be licensed to the primary station only, and that, as is the case for analog on-channel boosters, an application for such should be treated as a minor change. The technical and operational requirements should be the same as for translators.

There may be circumstances where the best frequency for a translator is the frequency of the primary station. Such a translator should not be mandated to be an on-channel booster unless an eligible applicant so designates it: rather, it should be considered a translator where by coincidence the input and output frequencies are the same. Such a translator should be available to be licensed to any prospective licensee, not just the primary station, and should meet all of the translator rules. The primary station, through its ability to grant or withhold rebroadcast permission, has adequate control over where such a translator could be built.

NTA recommends that the power limits for digital on-channel boosters be the same as those for digital LPTV and translator stations.

It is recognized that there are technical arguments in favor of specifically engineered "Single Frequency Networks" in certain terrain situations, and that there is an optimum ERP for each on-channel booster in such a network. It is recommended that the Commission consider such networks as a whole system, on a case by case basis, until more experience is gained in their construction and operation. It would be appropriate to waive the booster power limit as required to optimize the network.

The present Rules (74.733) contain provisions for "UHF Translator Signal Boosters," but the filing of new applications was suspended in 1975, presumably for lack of interest. At that time, the technology was not very conducive to this type of installation. Now, and particularly in the case of digital signals, such small boosters are feasible and would be useful.

Given the advances in technology since 1975, it is recommended that the prohibition on applications for analog on-channel boosters be rescinded and that translator licensees be allowed to apply for them as a minor change, provided any such application does not extend the protected

contour of the parent translator.

The final stage input power rating in 74.733 should be replaced with an ERP limit. The recommended values are: analog 20 watts ERP, digital 2.0 watts ERP.

REMAINING ISSUES

¶ 123 *Digital Call Signs*

There is clearly a need for unique call sign designations for LPTV and translator stations. It should be noted that the call signs for deleted LPTV and TV translator stations are shown in the CDBS database with a "D" in front of the call sign, e.g., DW24XX. It is important that whatever digital designation that is added should not be confused with the D-for-deleted designation.

It will be least confusing if the DT designation as used for full service stations is used during the transition period. For example,

conventional call:	W43XX-DT
four letter call:	WWWW-LD (for low power and digital)
class A:	WWWW-CD

¶124 *Fees*

Regulatory fees for digital TV translators should be handled in the same way as those for analog translators. Companion digital LPTV or TV translator stations should not be assessed a separate fee.

NTA believes that the following two additional items should be addressed that were not included in the NPRM, *supra*:

a. Interchanging the Channels of An Analog and Companion Digital Station

When (and if) an analog LPTV or TV translator station receives a construction permit for a companion digital channel, it would be more logical for the digital station to be built on what will be the long term channel which will be used after the conversion to digital is complete. Thus, for example, if an in-core station receives a companion digital assignment on an out-of-core channel, it would save significant cost in the long run to build the digital station on the in-core channel, and operate the analog station on the newly assigned out-of core channel. It is requested that a channel swap as described here be allowed as a minor change, subject, of course, to successful interference analysis of each station on its new channel.

b. Frequency stability

Unlike analog stations, the interference from a digital station to other stations is not dependent on the exact frequency of the station. The need for accurate control of the frequency of a digital station is primarily in order to keep the desired signal in proper relationship to the mask filter, which most likely will be tuned on the basis that the digital station is exactly on frequency.

There does not seem to be any need for a frequency accuracy specification.

If a new digital station is to operate on an upper adjacent channel to an analog station, it may be necessary to establish the exact frequency relationship to the analog station specified in §73.622(g). This paragraph requires that the digital pilot carrier frequency be 5.082138 MHz above the visual carrier of the lower analog station with a tolerance of +/- 3 Hz. Apparently the

interference to the analog station which this precise control is intended to correct only becomes a problem when the digital signal is considerably stronger than the analog signal and thus will not be a frequent problem. However, it is recommended that there be a requirement that a digital station which causes more than de minimus interference to a lower adjacent channel analog station be required to establish this precise spacing. The expense should be borne by the digital station owner. The existing analog station owner should have the choice of providing full cooperation with the digital proponent or tolerating such interference as could be eliminated by the precise spacing.

CONCLUSION

Analog translators are a critical component of the broadcast television delivery systems, and digital translators will become a major component of broadcasting in the future . The National Translator Association urges the Commission to assign a very high priority to the completion of this proceeding.

Respectfully submitted,

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November 25, 2003

CERTIFICATE OF SERVICE

I, Jennifer A. White, do hereby certify that a copy of the foregoing COMMENTS has been sent, via U.S. Mail, this 25th day of November, 2003, to:

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